

## Claims

- [c1] 1. A pressure transducer for a hydrogen reciprocating compressor in a sour gas environment comprising a sensor head including a diaphragm mounted on a free end of said sensor head; wherein said diaphragm is constructed of a nickel-based alloy with a noble metal plating on an exposed side thereof.
- [c2] 2. The pressure transducer of claim 1 wherein said nickel-based alloy is a C-276 alloy.
- [c3] 3. The pressure transducer of claim 1 wherein said sensor head includes a threaded end portion and an integral hex nut that are comprised of said nickel-based alloy.
- [c4] 4. The pressure transducer of claim 3 wherein said nickel-based alloy is a C-276 alloy.
- [c5] 5. The pressure transducer of claim 1 wherein said noble metal plating comprises 24K gold plating.
- [c6] 6. The pressure transducer of claim 1 wherein said gold plating is applied to a thickness of about 5-8 microns.

- [c7] 7. The pressure transducer of claim 1 wherein said diaphragm has a thickness of about 42 microns.
- [c8] 8. The pressure transducer of claim 7 wherein said gold plating is applied to a thickness of about 5-8 microns.
- [c9] 9. The pressure transducer of claim 1 and further comprising a housing connected to said sensor head by a transducer cable.
- [c10] 10. The pressure transducer of claim 9 wherein said transducer cable is enclosed in armor.
- [c11] 11. A pressure transducer for a hydrogen reciprocating compressor in a sour gas environment comprising a sensor head including a diaphragm mounted on a free end of said sensor head;  
wherein said diaphragm is constructed of a nickel-based C-276 alloy with gold plating on an exposed side thereof; and  
wherein said sensor head includes a threaded end portion and an integral hex nut that are also constructed of said nickel-based C-276 alloy.
- [c12] 12. A method of monitoring line pressure in a reciprocating hydrogen compressor in a sour gas environment comprising:
  - a) providing a pressure transducer having a sensor head

and a diaphragm located flush with a free end of said sensor head composed of a nickel-based alloy;

b) applying gold plating to one side of said diaphragm; and

c) mounting said pressure transducer in a reciprocating compressor with said one side exposed to the sour gas.

[c13] 13. The method of claim 12 wherein said nickel-based alloy comprises a C-276 alloy.

[c14] 14. The method of claim 12 wherein said gold plating comprises 24K gold plating.

[c15] 15. The method of claim 12 wherein said gold plating is applied to a thickness of about 5-8 microns.

[c16] 16. The method of claim 12 wherein said diaphragm has a thickness of about 42 microns and said gold plating is applied to a thickness of about 5-8 microns.

[c17] 17. The method of claim 12 wherein said sensor head includes a threaded end portion and an integral hex nut comprised of said C-276 alloy.